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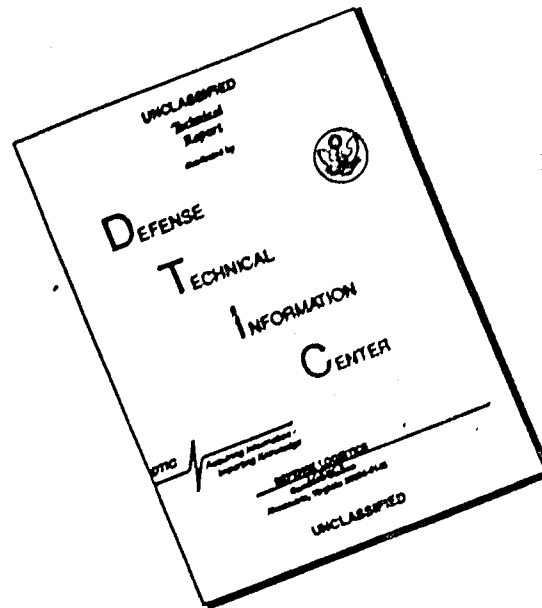
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AGAM-P (M) (31 Oct 68) FOR OT RD 683117

4 November 1968

SUBJECT: Operational Report - Lessons Learned, Headquarters, 864th
Engineer Battalion (Const), Period Ending 31 July 1968

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1. Subject report is forwarded for review and evaluation in accordance with paragraph 5b, AR 525-15. Evaluations and corrective actions should be reported to ACSFOR OT RD, Operational Reports Branch, within 90 days of receipt of covering letter.
2. Information contained in this report is provided to insure that the Army realizes current benefits from lessons learned during recent operations.
3. To insure that the information provided through the Lessons Learned Program is readily available on a continuous basis, a cumulative Lessons Learned Index containing alphabetical listings of items appearing in the reports is compiled and distributed periodically. Recipients of the attached report are encouraged to recommend items from it for inclusion in the Index by completing and returning the self-addressed form provided at the end of this report.

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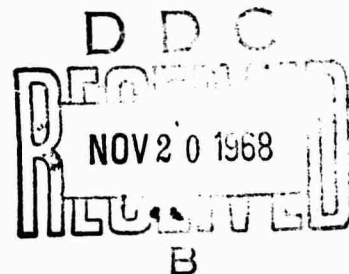
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DEPARTMENT OF THE ARMY
HEADQUARTERS, 864TH ENGINEER BATTALION (CONST)
APO 96240

EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (RI))

THRU: Commanding Officer
35th Engineer Group (Construction)
APO 96238

Commanding General
18th Engineer Brigade
ATTN: AVEC-C
APO 96377

Commanding General
United States Army, Vietnam
ATTN: AVHGC(DST)
APO 96307

Commanding in Chief
United States Army, Pacific
ATTN: GPOP-DT
APO 96588

TO: Assistant Chief of Staff for Force Development
Department of the Army (ACSFOR DA)
Washington, D.C. 20310

1. Section 1, Operations: Significant Activities.

a. Battalion Narrative

Changes in the command and staff elements of the 864th Engineer Battalion occurring during this reporting period included the Battalion Executive Officer, Battalion S-3, Battalion Adjutant, Battalion S-4, Battalion Surgeon, Company Commanders of Headquarters and Headquarters Company, and C Company, Engineer

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EGACBC-3

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31 July 1968 4

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Equipment Maintenance Officer, Unit Personnel Technician, and Unit Supply Technician. MAJ Hugh P. Johnson arrived in the unit on 15 July 1968 and replaced MAJ Jack G. McNall who departed 5 July 1968 as Battalion Executive Officer. CPT Richard W. Anderschat, former Commanding Officer, Company A, joined the S-3 section on 21 June 1968 as the Assistant Operations Officer. With the departure of MAJ Lynn D. Hickman on 15 July 1968, CPT Anderschat assumed duty as the S-3 Officer. 1LT Timothy J. Asher assumed command of Company A on 21 June 1968, vacating his position as Equipment Platoon Leader of Company A. CPT Daniel H. Hornbarger, newly arrived in country, assumed command of Company C on 4 May 1968 vice CPT Harold A. Davidson Jr. who was reassigned to MACV. 1LT Christopher Dunn Jr. assumed command of Headquarters and Headquarters Company on 22 June 1968 replacing 1LT Ralph V. Willing. CPT Marion M. Hunter became the Battalion Adjutant on 6 June 1968 replacing 1LT Dennis R. Britt who departed for CONUS less than a week earlier. 1LT Nicholas H. Koch assumed the duties of Battalion S-4 upon the departure of CPT Sheldon B. Glorit at the close of the reporting period. CPT James R. Hattaway, the Battalion Surgeon, and 1LT James H. Berry, the Engineer Equipment Maintenance Officer, departed 21 June 1968 and 17 July 1968 respectively. No replacements have been received to fill these two (2) positions.

The Battalion engaged in 18 Company days of training during the reporting period. This training included Command Information Topics, Character Guidance, Safety, and individual and crew served weapons firing for familiarization and qualification.

The continuing emphasis on the rehabilitation of National Highway QL-1 and HL-1, necessitated further relocation of organic units. Company D moved from the Dong Ba Thin Army Compound to the Sip Ja Sung ROHA Compound. The ROHA Compound is located four (4) miles NNW of Nha Trang adjacent to Highway HL-1. The move was well planned and no significant problems were encountered. The company closed into Sip Ja Sung on 8 July 1968 less 26 men from the Earth-moving Platoon. These men were relocated to the Company C base camp for attachment in support of the rehabilitation of QL-1 in the Company C area of responsibility. During the second (2nd) week of June the First Construction Platoon of Company C moved from the Nha Trang area to Ninh Hoa. The platoon had been working on an AUTOSEVCOM Facility and was relocated with augmentation to start work on the new company cantonment area at Thon Tan Thuy.

For the period May through July there were two (2) changes in attachments. The First Platoon of the 553rd Engineer Company (Float Bridge) transferred to the 87th Engineer Battalion (Construction) on 1 June 1968 when this Battalion began to relocate Company D from the Dong Ba Thin area. The 23rd Engineer Detachment (Well Drilling) was attached to this organization from the 35th Engineer Group.

As in the last reporting period the Battalion continues to experience shortages in assigned personnel. The average aggregate strength during the

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

quarter was approximately one-hundred (100) less than the authorized strength. The shortage of senior non-commissioned officers continues to be a critical problem area.

As of 31 July 1968 this Battalion had assigned twenty-six (26) non-commissioned officers in pay grade E-7, E-8, and E-9 as opposed to an authorized strength of forty-four (44). Of the twenty-six (26) assigned seven (7) are thirty (30) day losses, three (3) are sixty (60) day losses and one (1) is a ninety (90) day loss. The Battalion has had the following NCO vacancies since dated indicated:

<u>POSITION</u>	<u>NOS</u>	<u>GRADE</u>	<u>VACANT AS OF</u>
Const Oper Sgt	51H50	E-8	June 68
Const Oper Insp	51H40	E-7	Dec 67
PL Const Insp	51F40	E-7	Dec 67
Mess Steward, Hq Co	94B40	E-7	Mar 68
Equip Plt Sgt, A Co	62E40	E-7	June 68
Mess Steward, A Co	94B40	E-7	May 68
Const Supv, C Co	51H40	E-7	Jul 68
Mess Steward, C Co	94B40	E-7	Apr 68
Const Plt Sgt, C Co	51H40	E-7	Jul 68
Const Plt Sgt, C Co	51H40	E-7	Jul 68

The Battalion is experiencing a shortage in officers which will become acute during the next quarter. As of 31 July 1968 this Battalion had assigned twenty-nine (29) officers compared to an authorized strength of thirty-four (34). The projected losses through September 1968 are ten (10) officers with no projected gains.

The Battalion has had the following officers vacancies since dates indicated:

<u>POSITION</u>	<u>VACANT AS OF</u>
Bn Surgeon	21 June 68
Engr Equip Mnt Off	17 Jul 68
Pipeline Engr	14 Apr 68

2

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31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Commo Off

5 Nov 67

Maint Plt Ldr, A Co

21 June 68

In September the Battalion will lose the Civil Engineer and the Construction Engineer. These positions must be filled by technically qualified engineer officers if the Battalion is to continue effective operations. Of tremendous impact to the operational planning of the Battalion was the implementation of the Engineer force structure program. Specifically the 864th Engineer Battalion is in the phase II standardization program which eliminates 204 military spaces, and augments the Battalion with hire of 306 local Nationals. Initial planning for implementation reveals many problem areas which must be overcome in order for this unit to maintain its construction capabilities. Since the program deletes one-hundred and three (103) truck driver positions it becomes necessary to cross train the personnel in the construction platoons as truck drivers. The dual capability of the Battalion (horizontal and vertical construction) will necessarily suffer. Of a greater consequence to this unit is the loss in flexibility which will be inherent in the utilization of local Nationals. Procurement of all skills required will be difficult in the large population centers such as Nha Trang and as the elements of the Battalion move to more remote areas the problem of procurement will be compounded.

Two (2) internal changes in organization were effected during the reporting period: To expeditiously haul, spread and compact base course in the Battalion area of responsibility a composite or base course "platoon" was formed from assets within the battalion and put under the operational control of Company B. This platoon consists of 24 each, 5-ton dump trucks, 2 each front-loaders, 2 each graders, 2 each tamper rubber-tired rollers, 2 each 10-ton steel-wheeled roller and 2 each 5000-gallon water distributors. The Utilities Section in Headquarter and Headquarters Company was disbanded because of a shortage of NCO supervisors and skilled personnel. The remaining personnel in the section were assigned to the line companies with the exception of the Water Purification Team which remained in Headquarters Company.

The major construction effort continued to be on the rehabilitation of QL-1. Several significant vertical projects were also undertaken during the period and are covered in the individual company narratives to follow. The weather as well as the enemy did not cause any significant delays in the Battalion's construction program. An indication of the Battalion's achievements is given by the following statistics for the period:

Tons of crushed rock produced	40,500
Tons of hot asphalt mix produced for small paving operations in the Nha Trang Area	375

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SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Cubic yards of unsuitable fill removed	10,300
Cubic yards of fill hauled	289,860
Cubic yards of base course spread	15,835
Kilometers of Highway completed to MACV standards	3.6
Kilometers of subbase prepared	6.8
Kilometers of subgrade prepared	3.0
Kilometers of National Highway maintained	104
Cubic yards of concrete placed without reinforcements	200
Cubic yards of concrete placed with reinforcement	521
Square feet of wood frame buildings	576
Square feet of wood hutments	1,252
Square feet of quonset buildings	3,920
Square feet of stabilized open storage area	24,800
Square feet of surfaced open storage area.	71,442

PACEMAKER support of the civic action program continued in several areas. The Montagnard village of Cai Cai that was adopted last quarter continues to benefit from the assistance offered by members of the battalion. Many boxes of clothing and dry goods have been received from individuals in CONUS for distribution to the villagers. A shower facility was completed during the quarter. Work was started on a transient housing unit in the village.

Morale continues to be high in the Battalion as indicated in part by the high overseas extension rate of personnel for their positions.

Attached as inclosure number one (1) is a list reflecting the organizational structure of the battalion.

-5-

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31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR#65 (R1))

b. Headquarters and Headquarters Company Narrative

During the reporting period, Headquarters and Headquarters Company continued to support the battalion administratively. Personnel and S-1 turned out the large volumes of paperwork necessary for the procurement and replacement of battalion personnel. The current Personnel Officer, CW2 G.E. Stogdill, replaced CW2 Leroy Hudson who departed for reassignment on 23 May 1968. The Personnel Sergeant, SFC John Rice Jr. departed on 31 July 1968 with no replacement available.

The S-2/3 section continued its normal operations during this reporting period. The Operations Sergeant, SFC Everett Barnes, departed the battalion on 12 June 1968. No replacement has yet arrived for SFC Barnes, and as a result the S-3 section is short three (3) of its authorized non-commissioned officers. Survey and soils personnel continue to insure the quality of our upgrading program on QL-1 with their constant vigilance. In design, projects completed include:

- (1) Dong Ba Thin Airfield and Control Tower
- (2) 569th Storage Facilities
- (3) Camp McDermott and PX Warehouse Drainage Plan
- (4) Aviation Support Facilities (Storage Warehouse)
- (5) Mosaic of QL-1
- (6) Dong Ba Thin Water Supply System
- (7) Gen. Shed and Wiring for AUTOSEVCOM
- (8) Recoverable Tent Frames
- (9) Transient Housing, Cai Cai village
- (10) 200 Man Recoverable Mess Hall
- (11) Field Maintenance Facility
- (12) Photo Operations Facilities
- (13) Recoverable Shower Facilities

Request for general materials and supplies coming through the S-4 section continued to be filled rapidly and accurately and presented no major problems to the Battalion Construction. Materials were also received in large quantities in an expeditious manner. However, the unit that does not have its own hauling capability should anticipate delays in receipt of their materials.

The aid station experienced a normal quarter except that there were incidents of elevated temperatures. An inspection of the infected area by the 43rd Medical Group Preventive Medical Officer resulted in the finding of a viral infection of unknown origin. A dynamic and continuing program of getting all personnel in the Battalion current on their immunizations was initiated during the quarter. As a result over 94% of the Battalion personnel were up to date on their immunization as of 31 July 1968.

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9

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31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

c. A Company Narrative

During the first portion of this reporting period A Company continued to operate two (2) Multi-Unit rock crusher sites. On 12 May the rock crusher and quarry operations at Ba Ngoi were turned over to the 610th Construction Support Company. During the period that the Ba Ngoi quarry was operated by this command, there was a severe shortage of rock drilling equipment. As a result, our rock crushing equipment was not utilized to the maximum extent possible. The highest production of crushed rock at Ba Ngoi was 6755 cubic yards in one (1) week. The average weekly production for the last four (4) weeks of crushing was 6100 cubic yards. These production figures at Ba Ngoi are to a large extent due to the assistance of Mr. Frank Dean, of Quinton Engineering, who appreciably assisted our quarry operation. Total crushed rock production at Ba Ngoi from the date of opening until turn over was approximately 125,000 cubic yards. The 200 TPH Multi-Unit rock crusher was moved out of Ba Ngoi by convey on 12 May 1968. Trouble was encountered by the convey in passing under low electrical power and telephone lines when entering Nha Trang. The 200 TPH crushers are not designed for towing in confined areas without major disassembly. There were no problems in towing our TO&E 75 TPH crusher. All equipment except one (1) Japanese track drill and one (1) 600 CFM compressor was moved out of Ba Ngoi to Nha Trang. The 75 TPH TO&E rock crusher is presently being rebuilt. The 200 TPH Multi-Unit crusher is being turned in for salvage.

Since the transfer of the Ba Ngoi Quarry, rock production in Nha Trang has shown a marked increase, with a high week of 3940 cubic yards. The production of 1½ inch minus aggregate at Nha Trang stopped for 6 weeks due to a lack of main drive belts for the secondary unit. There is a shortage of 480 inch belts required to operate the main drive. The operators and maintenance personnel who had previously been at Ba Ngoi enabled us to operate the Nha Trang plant on two (2) 10 hour daily shifts. Total rock production at Nha Trang for this reporting period was 16,745 cubic yards. Of this total, 16,415 cubic yards were produced after the Ba Ngoi operations were terminated. The asphalt plant produced 375 tons of hot asphalt mix during this reporting period for support of small paving operations in Nha Trang. The main asphalt project was paving the parking area for The Joint Forces Tactical Operations Center here in Nha Trang.

All dozer effort for the middle of the reporting period was in support of C Company at Thon Tan Thuy in the clearing and development of a cantonment area. Dozer effort for the last half of the reporting period has been utilized in the development of a new quarry site at Thon Tan Thuy. Construction of an adequate haul road to the quarry site posed several problems; all of which were overcome. Overburden at the new quarry site varies from 6 to 18 inches. The rock underneath is a solid blue granite. The location for the crusher at the new quarry site has been prepared for concrete slabs.

7

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31 July 1968 10

SUBJECT: Operational Report of the 861th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

In May this unit suffered three (3) major personnel losses, two (2) in the maintenance field. SFC William Pearson who worked in this unit's Engineer Direct Support Maintenance Section departed, and was replaced by SFC Billy Denny newly arrived "in-country". MSG David Landis arrived in this unit during the early part of this reporting period and assumed duties as the Maintenance Platoon Sergeant. SFC Harry Yost, who had organized and controlled our Battalion Maintenance Section, departed this command early in June, and SSG Wilbor was moved from Headquarters Company to fill this vacancy. In June 1LT Asher left his position as Equipment Platoon Leader to assume command of this unit, when CPT Richard W. Anderschat moved to the S-3, Section. 1LT Stepp took over the Equipment Platoon. Our TO&E Maintenance Platoon Leader position remains vacant.

d. B Company Narrative

Company B continued its efforts this quarter in two (2) areas of endeavor; vertical construction in the Nha Trang area and LOC rehabilitation on National Highway QL-1. During the quarter, however, the main effort of the company was shifted from vertical construction to horizontal construction. Upon completion of the Joint Forces Tactical Operations Center, the major construction project undertaken last quarter, Company B expanded its role in the Battalion's rehabilitation of highway QL-1 from Dong Ba Thin to Dien Khanh. In addition to continuing the 3.12 miles of subbase reconstruction, begun during the last quarter, the company was assigned the responsibility for hauling spreading, and compacting base course on the prepared subbase remaining in the Battalion's area of responsibility. The composite or base course platoon discussed in the Battalion Narrative was utilized to good advantage in this respect. The company also assumed the responsibility for coordinating the paving operations of the 610th Engineer Company (Construction Support) within the Battalion area of responsibility. To facilitate control of the increased effort on QL-1 and to provide the needed support for an enlarged troop force, Company Headquarters, to include supply and maintenance, joined Earthmoving and First Construction Platoons at the base camp site shared with Camp C adjacent to QL-1 on 12 July 1968. Second Construction Platoon remained in Nha Trang to continue work on several vertical projects.

Subgrade construction on QL-1 for the period involved the removal of 10,300 cubic yards of waste material and the placement of nearly 58,000 cubic yards of fill material. Fill material was obtained from three (3) borrow pits, two (2) of which were established during the quarter. First Construction Platoon completed two (2) 70-foot long, twin-48" culverts, one (1) 80-foot long, triple-48" culvert and one (1) 60-foot, single-24" culvert. Their major effort is now devoted towards completing a prefabricated concrete deck bridge having a 15 foot span. Site preparation involved removal of saturated sand and clay to a depth of ten (10) feet and backfilling with large blast rock in order to stabilize an area for the abutments. The four (4) deck slabs and two (2) walkway slabs have been precast and will be set in place when the abutments are complete.

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31 July 1968

SUBJECT: Operational Report of the 364th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Since its formation in mid-June, the base course "composite platoon" has spread 10,000 cubic yards of crushed material, beginning in the D Company area of responsibility and working North into C Company's and eventually B Company's area. Base course is placed in two (2) 4 inch compacted lifts. The first lift extends over 26 feet of roadway with a 4" strip of built-up subbase material on each side. The second lift extends over the entire 40-foot roadway to provide a 24-foot base for pavement and two (2) eight-foot shoulders consisting of 4 inches of stabilized base course. The wearing surface now consists of a single 2½" lift of compacted asphaltic concrete. This is a change to the previous design of two (2) one and half inch lifts of asphaltic concrete.

The 610th Engineer Company (Construction Support) has completed 1.9 miles of 24-foot wide, three (3) inch thick, asphalt pavement, since Company B acquired the task of coordinating paving operations.

Second Construction Platoon has continued its effort on a variety of vertical projects in Nha Trang. Foremost among their accomplishments this quarter was the completion of the Joint Forces Tactical Operations Center. The structure is designed to withstand rocket or artillery attack and its walls are constructed accordingly of twelve (12) inch thick, blast rock masonry wall and a three (3) inch thick lumber wall separated by a blast absorbing blanket of sand which is three (3) feet thick at the base. The roof is a sandwich consisting of a five (5) layer lamination of two (2) inch lumber, a one (1) foot thick sand blanket, and eight (8) inches of heavily reinforced concrete, covered on the surface with T-17 membrane for waterproofing. The structure is built on a reinforced pan type floating slab. The completed facility includes 1,700 cubic yards of asphalt parking area around the building and is enclosed by 625 feet of eight (8) foot cyclone security fence. The facility was dedicated during a formal tri-service ceremony on 3 June 1968.

First Construction Platoon from Company C was placed under operational control of Company B for the purpose of constructing the AUTOSEVCOM Facility, a 20 by 50 foot concrete block building located on the Nha Trang Air Base. Since the concrete blocks were not readily available in the construction supply system, B Company obtained a block manufacturing machine on loan from 5th Special Forces Group and manufactured the required blocks. Second Construction Platoon, Company B, took over the project when the Company C Platoon was subsequently moved to Ninh Hoa. To date the concrete floor slab has been placed and the walls are about 75% complete. Design features of the building includes a completely grounded steel-reinforced system, acoustical tile ceiling and walls with painted wainscot, and air conditioning.

Construction was resumed on the Nha Trang Communication Center, a 40 by 60 foot frame building erected on a concrete slab. Progress has been slow on this project due to the non-availability of some specialty items. Accomplishments this quarter include installation of air conditioning ductwork, installation of vinyl asbestos floor tiles and a 90% completion of electrical work.

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31 July 1968

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for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

A 20 by 50 foot tropicalized building was prefabricated and erected at the Aviation Support Facility before this unit received another "stop work" order on the project. The project consisting of three (3) 20 by 48 foot quonsets, one (1) tropicalized building and a 75 by 202 foot aircraft hanger, was begun during the last quarter and subsequently stopped after the concrete pads for the quonsets and the tropicalized building were poured. The project was briefly reactivated about 1 July 1968.

The Second Platoon Pre-fab yard constructed nine (9) 12 by 24 foot tropicalized shelters. Each consists of a series bolted panels that can be easily assembled and disassembled, they are designed for use by MACV advisory teams which are continually relocating.

Other projects in the Nha Trang area included the construction of two (2) 20 by 96 foot quonset buildings for the 22nd Finance Detachment and a command bunker for the 864th Engineer Battalion Headquarters. This bunker consists of sand-bagged exterior walls with a blast rock roof covering ten (10) inches of timber. A small earthmoving section was attached to 2nd Platoon for the purpose of hauling all material into the Camp McDermott cantonment area. This platoon was also tasked to haul approximately 3,500 cubic yards of fill in order to bring to grade an area to be used by Republic of Korean Army Forces. Equipment used for this construction was on loan from Nha Trang Sub-Area Command.

LOC Restoration and maintenance for this quarter included the repair of approaches to one (1) bridge, replacement of decking, curbing and handrails on two (2) others, and upgrading of an existing 800-foot by pass for heavier traffic flow.

B Company twice supported C Company with dump trucks and front loaders for Operational Support Missions in their new area of responsibility near Ninh Hoa, RVN. The Earthmoving Platoon performed missions in support of Artillery Units on several occasions; digging gun pits, bunkers, and clearing fields of fire.

Participating in the Battalion's Civic Action program, B Company contributed clothing to project PACEMAKERS; collected and disposed of refuse in the Nha Trang area; donated scrap building materials in the form of lumber, cement, and concrete block to Vietnamese civilians; and hauled fill for local road repair.

e. C Company Narrative

The majority of the work accomplished by this unit during the reporting period has been on National Highway QL-1 between coordinates BP 914445 and BP 914406 (Original C Company Area of Responsibility).

10
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EGACBC-3

31 July 1968

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for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

At the beginning of the period, the highway between coordinates BP 914445 and BP 927428 (8,300 feet) was up to subgrade. Ditching and shaping remained to be accomplished.

A total of 840 linear feet of culvert, sizes 48", 36", and 30" was installed at 5 different sites during this period. This completes all culvert installation for this project. Masonry headwalls were installed at all culvert sites in the company's AOR. AIK labor was utilized to prepare the mortar but troops formed the headwalls. Much difficulty was encountered in bedding the culvert at the last site: a 3 barrel, 48" culvert at station 126 (4 ft. drop in elevation from inlet to outlet). Because of the high water table in the area it was extremely difficult to obtain a firm base. The final solution was to dig a sumphole beyond the lower invert of the culvert and continually pump the hole dry in an effort to lower the water level in the immediate area and thus drain off the moisture beneath the culvert site. Blast rock was spread beneath the culvert and this covered with sand. Excessive rain during the period of installation delayed progress as did the scarcity of pumps. When pumps were not available, 2 each 55-gallon drums welded together were used in conjunction with a crane to bail the water out of the hole.

At the beginning of this reporting period C Company began utilizing the eastern side of the D Company borrow pit at coordinates BP 959405. The material was appealing because of its rocky composition and easy compactibility. The long haul distance slowed progress slightly but the material obtained was well worth the time. Required compaction was easily obtained with this material by sole use of the 50-ton roller, instead of a sheep's foot roller. Continual problems were encountered in maintaining sufficient moisture on the road for compaction and dust control. Construction progress was also hindered by the ever present problem of traffic control in an area of excessive convoy and civilian travel.

Security in the D Company borrow pit was another daily problem. At first minimum security was maintained. However, when one (1) 290M operator was seriously wounded by a homemade claymore mine and small arms fire, the security element was increased to 8 to 10 US troops plus a similar number of Popular Forces. Several reports were subsequently made of shots being fired in the area but no serious incidents occurred there after.

Meaningful statistics concerning this section of QL-1 for this period were:

Total equipment hours expended	5,573
Total man hours expended	30,782
Total amount of material hauled	67,590 cu yds

11

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31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Length of subbase prepared	10,500 ft
Length of subgrade prepared	9,800 ft
Length of stripping and ripping	1,200 ft

On 10 July 1968, the original C Company AOR on QL-1 as described above was brought to grade and made ready for base course. Ditching and shaping the side slopes remain to be done.

On 11 July 1968 work was started to prepare the subbase main section of the original B Company AOR on QL-1 between coordinates BP 911454 and BP 910462. The only vertical structure to be constructed was an Ables' Bridge (15' concrete precast stringers and decking) at coordinates BP 912449. The progress made to date includes excavation of unsuitable bearing material to a depth of 10-feet below ground elevation. This was sufficiently wide enough and long enough to permit construction of the footers, abutments and wingwalls. Eight (8) loads of large blast rock have been placed in the hole to date. The hole has been pumped daily in an effort to lower the water level and stabilize the area. At first the borrow material for this section of QL-1 was taken from a pit close at hand. However because of the high plasticity index of the material an old B Company pit was reopened and the material found to be much more acceptable although the haul distance increased.

It was found that when stripping and grubbing through villages for this section of road the subgrade appeared to pump more so than in other areas thus requiring the expenditure of a greater engineering effort.

Meaningful statistics for this section of the road for this period were:

Total equipment hours expended	913
Total man hours expended	4,365
Total amount of material hauled	4,160 cu yds
Length of grubbing and stripping	3,000 ft

It is anticipated that the entire B Company AOR on QL-1 will be to grade by 20 August 1968. It should be noted that a portion of the Earthmoving Platoon of D Company has been attached to this unit for completion of the B Company AOR. They are currently being utilized in a construction support role for B and C Company.

During the second (2nd) week of May the First Construction Platoon was attached to B Company to augment their work force on the AUTOSEVCON Facility.

12

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

The First Construction Platoon (minus) also returned to Hon Tre Island and constructed additional facilities for the Hawk Missile site at that location. The scope of the work included installation of a deadman (1,700 lbs static load), placement of 1,200 square feet of concrete launch pads, laying of 3,600 square feet of M8A1 matting, and stabilization of 3,720 square feet of area. The stabilized areas were to facilitate the preparation of drones for launching. A control tower and VIP bleachers were also constructed. For this project 438 equipment hours were expended as well as 1,904 man hours.

During this reporting period, the First Construction Platoon replaced a shed at the 569th TOPO Company that was damaged by hostile action.

At the end of May work was started on the new company cantonment area at Thon Tan Thuy (TTT), coordinates BP 000735 this area is intended to billet C Company plus the quarry section of A Company when effort is begun on the rehabilitation of QL-1 North of Nha Trang. Approximately 90,000 square meters have been cleared. Two (2) terraces have been constructed and 5 tent frames erected on one (1) of the terraces. A stabilized pad has been built for the mess hall and forms laid in preparation to pour the slab. Approximately 20 tent frames have been prefabricated in the B Company facility at Nha Trang. Most of the mess hall has also been prefabricated. The First Construction Platoon (after detachment from B Company), part of the Earthmoving Platoon, and part of the Second Construction Platoon have been engaged at TTT. To date 7,985 man hours and 2,033 equipment hours have been expended on this project.

During the second (2nd) week of June the First Construction Platoon was detached from B Company and relieved of duty on the AUTOSEVCOM Facility to occupy an area in Ninh Hoa vacated by a platoon of D Company, 577th Engineer Battalion. They assumed responsibility for the self-help project of building a cantonment area for the 48th Assault Helicopter Company. This project was to be concurrent with construction at TTT. During this period approximately 10,000 square feet of concrete pads have been placed. Construction of two (2) NCO billets have been partially completed and members are being prefabricated for the self-help construction of the remaining structures; 4 BOQ's, and NCO Club, and a service club to date on this project 1153 equipment hours, 1,338 man hours and 1,785 self-help man hours have been expended.

LOC Maintenance was performed on QL-1 at bridge #197, coordinates BP 969792. The blown span was filled over and compacted. Retaining walls still need to be put on.

This unit received 2 Operational Support Missions during this period. On 28 June 1968 the First Construction Platoon in Ninh Hoa plus the base course platoon from B Company were given the mission of improving a bypass at bridge #30 on QL-1. On 26 July 1968 this unit was again tasked to improve road conditions and bypasses on QL-21 out to bridge #15.

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

On 25 May 1968, the company area at Soui Dau received 6 rounds of 75mm recoilless rifle fire from the vicinity of coordinates BP 905405. One man was seriously wounded and evacuated, another was slightly wounded. Equipment damage was insignificant.

f. D Company Narrative

This unit was engaged in training for 14 half days during this reporting period. Training for this period included 12 Command Information Topics along with 96 hours of Mandatory Training Topics and 12 hours of Inter-grated Training Topics listed in the Battalion Regulation 350-1. Mandatory Training for this period included weapons qualification and familiarization with the M-14 rifle, the M-60 Machine Gun, and the 66mm Antitank Rocket M-72, 14W. This training was given by experts of the 51st Special Forces Detachment in Dong Ba Thin, and Officers and NCO's of this unit.

This past reporting period, the continuing fine efforts of the men of this unit has resulted in the winning of the 35th Engineer Group Certificate of Merit for Safety for the month of April. During this reporting period these individuals have been recognized for their services: First Sergeant Edward H. Hill received the Bronze Star Medal for outstanding performance of duty while serving as First Sergeant of this unit from May 1967 thru May 1968; Staff Sergeant Ethan Rider also received the Bronze Star Medal for his devotion and performance of duty while serving with this unit for three consecutive years in Vietnam; Specialist Five Lonnie Pack received the Army Commendation Medal for his outstanding performance of duty while working on the Rehabilitation of National Highway QL-1. During this period, the 864th Engineer Battalion (Const) held its Organizational Day on 17 May 1968 during which time each Company in the Battalion participated in various competitive activities. The men of this unit put their best foot forward into making the day a success and won 5 out of the 8 awards presented. The awards consisted of the Battalion Volley Ball Champions, Tag of War Champions, Log Sawing Champions, Horse Shoe Pitching Champions and the over all Organizational Day Champions.

Nearing the completion of this unit's area of responsibility in rehabilitating Highway QL-1, this unit was given the task of rehabilitating Highway HL-1, the Nha Trang By-Pass.

In May of this reporting period, the construction projects in and around the Dong Ba Thin Army Compound were turned over to the 87th Engineer Battalion to facilitate this unit's move to Sip Ja Sung. Projects turned over to the 87th Engineer Battalion included the 2000 KW Generator Plant, the Dong Ba Thin Air Field Control Tower, the relocation of the Dong Ba Thin Water Facility, and the rehabilitation of the Ky Ca Float Bridge. The First Platoon of the 553rd Float Bridge Company, who were attached to this unit, were also picked up by the 87th Engineer Battalion for the purpose of rehabilitating the Ky Ca Float Bridge.

14
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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

Projects worked on by this unit during the reporting period included the following:

The Earthmoving Platoon continued in the rehabilitation of Vietnamese National Highway QL-1. Having already completed 2.5 miles of Phase III of this construction project in the past quarter, the platoon completed construction of a bypass 1.8 miles long, west of the village of Soui Vinh. The purpose of the bypass was to prevent the moving of many of the houses situated on the edge of Highway QL-1 that runs through the village. A total of 2.2 miles of Phase IV was also completed through the sub-base portion of construction this quarter.

The construction process used in the construction of the existing highway is as follows:

The existing road bed is widened out to a width of 40 feet. To do this, the existing shoulders are cut half way down from the existing level of the road bed. The reason for doing this is to obtain a stable road when fill is used to raise the elevation of the road, and prevent backfilling on slopes which give no bond between material used as fill and existing material in the embankment.

It has been found that when cutting shoulder embankment to a point of intersecting the existing water table before fill material can be placed, a sand or rock blanket of approximately one (1) foot in thickness may be used to separate the water table from the fill material being used. This blanket provides sub-surface drainage and prevents capillary action.

Fill material is then placed to an elevation of approximately one (1) foot below the existing roadbed. This fill material is placed in six (6) inch lifts then watered and compacted using a sheepfoot and a 50-ton Pneumatic Roller. The minimum densities required after compaction must meet 95% modified AASHTO. The existing road bed is then ripped up and distributed evenly across the 40 foot width. Additional material, if needed, is hauled into obtain sub-base elevation.

Prior to placing 8 inches of base course material across the 24 foot roadway, select material is used to build the shoulders up approximately 4 inches

The base course is placed and compacted in two (2) four (4") inch lifts. It is compacted using a steel wheeled roller, a rubber tired tamper roller and water to 100% compaction. This finished surface is then primed with asphalt cutback, cured for 24 hours, and then paved with one (1) 2 1/2" compacted lift of asphalt concrete. After the section is paved, the shoulders are raised three (3) inches using base course material, compacted, then sealed with a asphalt cut-back.

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EGACPC-3

31 July 1968 18

SUBJECT: Operational Report of the 66th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

The finished product has a sub-grade that is a minimum of six (6") inches thick, with a CBR of 5, compacted to 90% AASHO, a sub-base a minimum of six (6") inches thick, with a CBR of 20, compacted to 95% AASHO; a base 8 inches thick with a CBR of 80, compacted to 100% AASHO and two (2) 8 foot shoulders compacted to 100% AASHO with a 5 inch crown from center line of the road to the edge of the shoulder.

Included in the road building operation is the installation of drainage culverts and the construction of stone masonry headwalls. The First Construction Platoon became experts in preparing the culvert sites, placing culvert and back-filling each culvert to meet the required compaction of 95% modified AASHO. A total of 6 1/2 linear feet of 24 inch culvert and 20 1/2 linear feet of 36 inch culvert were placed this reporting period. Vietnamese QUA masons provided the much needed help in erecting stone masonry headwalls around the completed culverts.

The Earthmoving Platoon completed 2.2 miles of double lane class 50 roadway to the end of our area of responsibility during this period. A total of 66,10 USMH, 4,186 VMH, and 19,953 Equipment Hours were expended. During this reporting period, 138,210 cubic yards of fill were placed, 5,635 cubic yards of 2"(-) rock were placed and 353,000 gallons of water were used. The 610th Engineer Company (CS) supported the Earthmoving Platoon by placing 17,315 square yards of penetrprime and a total of 1,596 linear feet of finished asphalt concrete roadway.

The Second Construction Platoon made a modification to a prototype revetment which was completed and discussed in the last quarterly report. After the helicopter is in the revetment a series of flaps made of M8A1 Matting are raised to give added protection to the craft. It was found that the flaps made of M8A1 Matting were extremely difficult to raise into place due to their weight. To correct this, the flaps were cut in half and angle iron placed 2 feet to the rear of the flap to act as a counterweight. It was found that by doing this the flaps could be easily raised and lowered by one (1) man (See diagram #1).

During this past reporting period the Second Platoon also completed the 8/26th Artillery Operations Bunker. The bunker is to be used to house tracking and computing equipment used in the defense of Dong Ba Thin and Cam Ranh Bay from mortar and rocket attacks. The bunker is 12 x 18 feet and is built of heavy timber and sandbags. A total of 38,000 sandbags were used to complete this project. A total of 1,840 USMH, and 984 VMH, and 370 Equipment hours were expended on this project.

The Dong Ba Thin Fire Department Maintenance Building was also completed this period by the Second Platoon. This project was started by the 11th Engineer Battalion (Combat). The 11th Engineer Battalion (Combat) had formed the 30 x 76 foot slab for the building. The Second Platoon placed the concrete pad. A small amount of reforming had to be accomplished before placing the pad due to the time lapse which occurred during the change over of the project to this unit from the 11th Engineer Battalion. The building is a lean-to type structure with one side open for vehicle access.

16 FOR OFFICIAL USE ONLY

14
EGACRG-3

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31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, MOS MOTOR-65 (R1)

The three (3) remaining sides were ship lapped two-thirds (2/3's) of the way up with the balance of the side being screened. The roof was of corrugated tin sheeting.

The First Platoon completed a helicopter washrack which had also been started by the 14th Engineer Battalion. This project consisted of a 30 x 50 foot concrete pad which contained a drain that ran approximately 60 feet to a distribution box. This portion of the project had been completed by the 14th Engineer Battalion. The First Platoon built and placed a tower made of 6 x 6 timber and a platform decked with 3 x 13's. On the tower was placed a 600 gallon storage tank with a 3 inch line running from the tank to the washrack.

A joint project in which all platoons participated was the building of our 200 Man Cantonment Area in Sip Ja Sung. The Cantonment Area consists of a 40 x 80 foot Mess Hall, a 20 x 35 foot shower, a 10 x 33 foot latrine and 24 each 16 x 32 foot tent frames for GP Medium tents. The Cantonment Area was built on an old rice paddy. The area had to be filled 3 feet on one (1) end tapering to a one (1) foot fill on the higher end. The area is approximately 410 by 970 feet and took approximately 18,400 cubic yards of fill. For dust control and to provide a more stable area, 3 inches of 2"(-) rock was placed in the Motor Pool. Approximately 815 cubic yards of 2"(-) rock were used for this purpose.

The 200 Man Mess Hall, built on a 40 x 80 foot slab, has prefabricated 10 foot wall panels made of 2 x 4's which are shiplapped 5 feet up and screened the rest of the way. The rafters are also made in sections to facilitate relocation. The roof is corrugated roofing placed on 2 x 4 purlins. The electrical portion of the Mess Hall consists of three (3) 120/208 volt lines run from a PA&E operated 100 KW Generator.

The shower is built on a 20 x 35 foot concrete pad. The walls are constructed of prefabricated sections for ease of transportation. The water supply is gravity fed from two (2) 1,000 gallon water cubes through a one (1) and one-half (1 1/2) inch pipe to a tee for the water heater. A mixing valve joins the hot and cold water for a non-variable temperature shower.

The latrine was built on a 10 x 33 foot concrete pad and is built with future movement in mind.

The construction of the recoverable tent frames consists of placing floor sections of one (1) inch plywood on frames over 2 x 6 sleeper. The wall sections are eight (8) feet by six (6) feet eight (8) inches. The tent frames is secured with bolts. The trusses are limited to four (4) and are of one (1) piece construction for ease of movement. Each tent frame is covered with a General Purpose Medium size tent. These frames can easily be prefabricated and erected at a rate of two (2) per day by a vertical platoon. The electrical components for each tent frame consists of three (3) variable speed fans, two (2) fluorescent fixtures, four (4) duplex convenience outlets, one (1) toggle switch, and a two (2) pole, 15 amp, circuit breaker.

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31 July 1968

SUBJECT: Operational Report of the 854th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

In the last quarter the First and Second Platoons worked on a civic action project which consisted of repairing two (2) bridges, Bridge #158 on QL-1 and Bridge #1 on HL-1. Bridge #158 on QL-1 is a single lane concrete bridge with a narrow sidewalk on each side. Accidents and a large volume of convoy traffic had torn out portions of the sidewalk making the bridge unsafe. Timber was used to redeck the damaged portions. The timbers were fastened to the concrete structure by means of cable. The cable was woven through the timber and fastened underneath by turnbuckles which were used to gain the proper tension in the cable. Two (2) sections of the bridge were repaired this way. One (1) section was approximately 40 feet long and the other section was approximately 50 feet long. The work was completed during the hours of darkness to reduce the traffic problem. Bridge #1 on HL-1 consisted of a 700 foot timber trestle, single lane, bridge with narrow sidewalks on each side. One (1) bent of the bridge had settled approximately 12 inches thus causing a dip. Traffic hitting this dip cracked three (3) 26 foot long stringers. These stringers were replaced and the bent built up to the level of the other bents. To accomplish this the tread and decking was removed from one (1) span and the stringers were replaced, using the rough terrain crane. No major difficulties were encountered and the bridge was only closed to traffic for a period of 14 hours.

2. Section 2, Lessons Learned: Commander's Observations, Evaluations, and Recommendations.

a. Personnel.

(1) Shortage of Skilled Personnel

(a) OBSERVATION: The utilities section of a Construction Battalion is set up to provide men with special skills to assist the line companies as required. Due to the shortage of NCO's and the almost total absence of highly skilled personnel in the SP/4 ranks, the Battalion found that its utilities section was not capable of performing its assigned mission.

(b) EVALUATION: The situation was alleviated by assigning personnel from utilities section to fill TO&E slots in the line companies. Production and quality have increased as a result of the reassignments. It has been found that the man who did not have the ability to "solve all the problems" adapted very well to getting the job done at line company level. By placing the men in the line companies the Battalion has left slots available for skilled personnel.

(c) RECOMMENDATION: When supervisory and skilled personnel are lacking the utilities section personnel with the exception of the two (2) Water Purification Teams should be redistributed to the line companies.

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EG4780-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (RI))

(2) Authorization of Personnel over TO&E

(a) OBSERVATION: When it becomes necessary to increase production on specific operations, excess equipment over TO&E authorization is frequently issued. However, there is no provision for increasing TO&E personnel strength to provide operators for this equipment.

(b) EVALUATION: Equipment augmentation without the required personnel to operate and maintain the equipment will not increase Unit capabilities.

(c) RECOMMENDATION: Whenever equipment over TO&E authorization is issued, there should be an additional augmentation of personnel. Without operator personnel the unit must use mechanics as operators, this impairs the company's ability to provide necessary maintenance support for the Battalion.

(3) Personnel for Security

(a) OBSERVATION: As construction units develop and occupy new areas the security requirements are greatly increased.

(b) EVALUATION: Sufficient personnel are not organically available to provide proper security without slowing the progress of assigned missions. Requests for personnel from combat units to provide security are seldom approved.

(c) RECOMMENDATION: Each construction company should be authorized at least one (1) squad to provide security for all operations in the field or when away from secure areas.

b. Operations

(1) Fiber Stresses of Lumber Being Shipped to Vietnam

(a) OBSERVATION: Excessive deflection occurred in the roof of the Tri-Nation T.O.C. built in Nha Trang. Investigation into the cause of the trouble revealed that the timber in use in the rafters had numerous knots, and serious checking. In addition, dry rot had set in on some of the members. Also the roof structure had been soaked by numerous rains. These aforementioned conditions drastically reduced the strength of the timber. The situation was corrected by nailing additional members to the side of every other rafter thereby producing a strong laminated beam.

(b) EVALUATION: Although reference sources indicate that Douglas Fir will withstand an extreme fiber stress of 2050 PSI, the lumber being delivered to Vietnam will not handle such loads.

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EGACBC-3

31 July 1963

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

22

(c) RECOMMENDATION: It is recommended that an extreme fiber stress of 1,250 be used. Other stresses should be adjusted accordingly.

(2) Indexing Publications on 3 x 5 cards

(a) OBSERVATION: Keeping an accurate, quick reference for publications on hand has always been a problem. A satisfactory solution which has been found utilizes a card index file. One (1) index is set up by publication number, the other is set up alphabetically by title. Each card reflects the publication number title, current date, and status of changes.

(b) EVALUATION: The index card system has measurably reduced the problem of maintaining an accurate and current listing of productions on hand.

(c) RECOMMENDATION: An indexing system as described above would improve office administration.

(3) Use of Tilt Up Construction

(a) OBSERVATION: A recent design problem was put before the Battalion Engineer section which involved designing a cheap, easy to construct structure of masonry. The structure is to be built by local unskilled labor and will provide permanent facilities for temporary refugee housing. Several solutions were considered but the one which proved to be the most economical and simplest to construct utilizes a thin slab on grade and tilt-up reinforced concrete walls.

(b) EVALUATION: The tilt-up wall sections can all be precast and set into place. The most complicated task is placing the 2 x 4 forms on the slab. The housing provided will be clean and durable.

(c) RECOMMENDATION: Tilt-up type construction is a cheap easy to construct method of providing permanent housing with unskilled labor.

(4) Use of Grid Underlay for Drawing to Approximate Scale

(a) OBSERVATION: Many of the drawings required from the drafting section are quick sketches to an approximate scale. An expedient to assist the draftsman is the use of a grid pattern placed under acetate and taped to the drawing board.

(b) EVALUATION: The use of the grid underlay has greatly simplified the problem of properly proportioning sketches. It also provides very convenient lettering guide lines.

20

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1).

(c) RECOMMENDATION: The grid underlay method can be used to good advantage when sketching to approximate scale.

(5) Use of Non-Standard Military Equipment

(a) OBSERVATION: As more and more non-standard military equipment is being purchased from civilian contractors now in Vietnam, there is a growing demand for spare parts for this equipment.

(b) EVALUATION: Orders take 3 to 6 months to fill. Local purchase of parts from contractors is becoming more and more difficult. There are no parts manuals or operators manuals with this equipment. This compounds the problem of obtaining spare parts.

(c) RECOMMENDATION: When non-standard military equipment is issued, an adequate supply of manuals and spare parts should accompany equipment.

b. Operations

(6) Blast-rock Masonry Walls

(a) OBSERVATION: Voids are readily created in blast-rock masonry walls when the irregular rocks are not carefully laid.

(b) EVALUATION: The irregularities of blast-rock make it a building material which must be handled with care to construct quality walls. When voids are left between the mortar and irregular rock the wall is subject to extensive leaking.

(c) RECOMMENDATION: For waterproof rock masonry structures insure that supervisors and masons check that each rock is firmly embedded in mortar when placed. Do not allow rock to be placed first with mortar filled in around the edges after.

(7) Blast Absorbing Sand Filled Walls

(a) OBSERVATION: Bunker type construction, which sandwiches a sand blanket between exterior and interior walls, requires special consideration for protection from water.

(b) EVALUATION: Sand will readily transmit water. If the exterior wall is porous or the sand is wet when placed in the wall cavity, and the interior wall is not completely sealed with some type of waterproofing agent, the sand will transmit water to the interior of the structure.

(c) RECOMMENDATION: For waterproof structure using blast absorbing sand filled walls, insure that the interior wall is completely sealed with some type of vinyl membrane (such as T-17), plastic vapor barrier, or asphaltic material. The exterior wall, if porous can be sealed by applying a plastic seal coat (FSN 8030-262-9013)

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFCR-65 (R1))

(8) Water Accumulation in Sand Filled Walls

(a) OBSERVATION: Sand, unless mechanically dried, contains a certain amount of moisture which accumulates when it is used as a filler in cavity wall construction.

(b) EVALUATION: The sand which is normally available for use in sand-filled walls contains water which will accumulate at the base of the cavity and may eventually leak into the interior of the structure.

(c) RECOMMENDATION: It is recommended that the base of a sand-filled wall section be sloped toward the exterior wall and that weep holes be provided through the exterior wall to relieve moisture accumulation.

(9) Incidental Injuries to Civilians

(a) OBSERVATION: Enterprising villagers have been gathering rock that is exposed on haul roads cut into a hill formation used as a borrow pit. The Earthmoving operations involve the use of 290M scrapers to collect fill material pushed down the hillside on to the haul roads by dozers. The extensive operations and the deep cut of the haul roads established areas that are not readily visible to the equipment operators. It is these areas that the villagers use to stock pile their collection of rock, littering the haul roads and in some cases making them impassable.

(b) EVALUATION: Unfortunately, only the harsh lesson of bodily injury was respected by the villagers. Repeated attempts to remove the villagers from the hill were made by the Engineer Company's Vietnamese interpreter, the National police, the Civilian Irregular Defense Group, and the U.S. Military Police. The injuries sustained were minor, luckily, and occurred when the dozer launched a cascade of rock which struck a villager who was totally hidden from the men operating the dozer. No charge was made against the equipment operators by the Military Police. The injured person was treated at the Battalion dispensary and released the same day.

(c) RECOMMENDATION: It is recommended that the liabilities of earthmoving operations be doubly considered and rigid restrictions on entrance into the earthmoving areas be strictly enforced.

(10) Critical Material Shortage

(a) OBSERVATION: Communications buildings in the Republic of Vietnam are similar to each other in function, construction, and require similar electrical equipment.

(b) EVALUATION: The electrical equipment required in the building is often of such a nature that it is not available through supply channels or exterior procurement time is needed. Expedient remedies or substitutions are not always possible.

25

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EGACBC-3

31 July 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, PCS (SFOR-65 (R1))

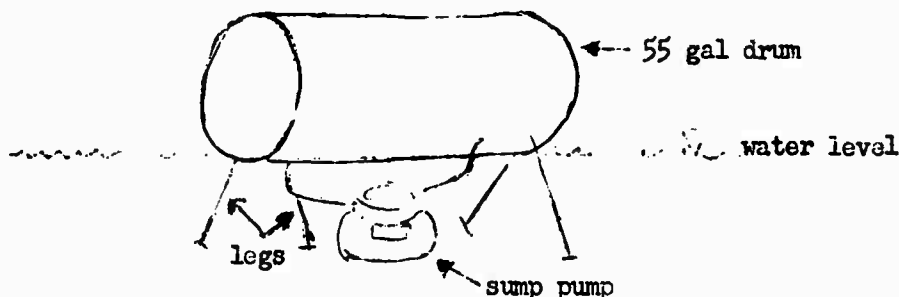
(c) RECOMMENDATION: Since the communications buildings are in use all over RVN and more are scheduled to be built, it would be advisable to prepackage all electrical components co-ordinated for each building thereby eliminating the specialized material shortages. Air conditioning units should be procured together with the duct work to preclude a mis-match.

(11) Operation of Sump Pump in Turbid Water

(a) OBSERVATION: During the installation of culverts, the use of pumps was required due to the high water table. The water was normally quite turbid and the sump pumps were initially set down at the base of the excavation. The vanes in the sump pump required constant replacement due to the abrasive action of sand and suspended matter.

(b) EVALUATION: The silt and rocks from the base of the excavation were damaging the vanes and clogging the pump, causing it to become inoperative.

(c) RECOMMENDATION: It was found that the sump pump worked well when suspended beneath a 55 gallon drum floating on the surface. Logs should be put on the drum to keep the pump clear of the bottom when the water level lowers.



(12) Use of Non-Submersible Pumps

(a) OBSERVATION: When attempting to pump water with a non-submersible motor driven pump it was observed that there was no discharge. The turbine and motor were operative and the intake and outlet on the pump were not blocked by solid material.

(b) EVALUATION: It was discovered that the non-collapsible intake hose was in fact collapsing on the inside under the suction pressure while the outside remained rigid.

(c) RECOMMENDATION: A flexible intake should be used. It can be made out of alternate sections of hose and pipe.

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EGACPC-3

31 July 1968 *26*

SUBJECT: Operational Report of the 86th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1))

(13) Failure of 50 ton Pneumatic Tired Roller Tongue

(a) OBSERVATION: The tongue on the 50 ton pneumatic tired roller was failing continuously.

(b) EVALUATION: The original tongue was rigid and when towed it had a "bobtail" the stresses and torque placed on the tongue easily snapped it.

(c) RECOMMENDATION: A universal joint-type of tongue was found to give long life. The tongue was able to rotate in all directions as the rig turned and twisted.



(14) Traction of 290M

(a) OBSERVATION: When the 290M wheel spins with no traction on a 290M tractor, there is no traction obtained by the other 3 wheels.

(b) EVALUATION: The 290M has a constant 4-wheel drive which causes this to occur.

(c) RECOMMENDATION: The 290M should have an available 4-wheel drive such as a $\frac{1}{2}$ ton has which can be engaged or disengaged by the operator.

(15) Modification to 20 Ton Rough Terrain Crane

(a) OBSERVATION: On the 20 ton rough terrain crane (carrier) steering control is lost when a snap ring comes out of its groove in the steering cylinder, springs, spacers, and thrust washers are held in place by this snap ring.

(b) EVALUATION: When the snap ring, becomes bent or loses its tension, it comes out of its groove. This allows the inner components to be released from the steering cylinder. The snap ring is a low mortality item and few are in the supply system.

(c) RECOMMENDATION: In order to repair the cylinder, replace all components and insert the faulty snap ring. While holding the spring in place, insert a steel ring made turned from 3/16 inch steel welding rod. Spot weld the ring into the top of the cylinder collar and the components will be held in place. When the replacement snap ring arrives it is a simple matter to remove the spot welds, remove the old snap ring and insert the new one. Reference T4 15-10-122-151, page 303, fig. 100.

27

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31 July 1968

EGACBC-3

SUBJECT: Operational Report of the 66th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SPOR-65 (R1))

(16) Self Defense from Cab of 290M Tractor

(a) OBSERVATION: It is difficult for an operator of a 290M to rapidly defend himself from the cab when fired upon.

(b) EVALUATION: The cab of the 290M is not large enough to allow the operator to quickly maneuver his M-14 so that he can defend himself. Since 290M operators often operate in remote borrow pits they are subject to harassment and are excellent targets in the cab.

(c) RECOMMENDATION: A light maneuverable weapon should be provided to equipment operators who must work in remote areas. This could be a carbine, preferably with folding stock, or a CAR 15.

(17) Method of Cutting Fill From Borrow Pit

(a) OBSERVATION: By cutting down hill the scrapers obtained the maximum amount of material, however the slope soon became too steep for cutting operations.

(b) EVALUATION: By cutting down hill the scrapers were loading the maximum amount of fill with least amount of strain on the equipment. This method of loading soon created a dangerously steep slope however.

(c) RECOMMENDATION: By utilizing a system of terraces efficiency in loading is increased with a minimum of hazard.

(18) Alteration of Prototype Revetments (See D Company Narrative in section 1.)

(a) OBSERVATION: The original side flaps of M8A1 Matting on the revetments were too heavy for one (1) man to erect.

(b) EVALUATION: Reduction in size of the side flaps and utilization of a counter weight system made the side flaps easier to erect.

(c) RECOMMENDATION: Revetments requiring side flaps of this nature should be modified as stated.

(19) Modified of the Tarpa Roller, 30 Ton Self Propelled, Model SP-1070 (Non-Standard Equipment)

(a) OBSERVATION: This Battalion must optimize utilization of all compaction equipment in order to effectively implement our portion of the National Highway Upgrading Program. Spare parts for the Tarpa Roller are not available through supply channels but these rollers must be kept operational.

25 FOR OFFICIAL USE ONLY

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A 3-3

31 July 1968

28

1.1.1.1: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SFOR-65 (R1)

(b) EVALUATION: The hydrovac wheel cylinder repair kit and
cylinder from the 2½ ton, truck M-35A2 can be modified and used for like
on the Tambo Roller.

(c) RECOMMENDATION: Before the turn-in of non-standard critical
component is accomplished due to lack of parts, attempt modifications by uti-
lizing standard parts.

(20) Construction Prints

(a) OBSERVATION: A shortage of Brunning copy paper made it
necessary to devise a method of using quality paper with a Brunning machine to
make prints.

(b) EVALUATION: The initial method devised utilized a cardboard
box with a ball of ammonia soaked cotton in the bottom as the developer. The
box deteriorated with use and was a slow process at best. A new developer box
was designed and built of plywood. The box is 8 inch deep 3 feet wide and 3½
feet high. Ammonia is placed in the box by using cotton on a mess hall tray.
The box is separated into two (2) sections by a wood lattice rack. The exposed
prints are laid on the lattice rack and the lid is closed for developing.

(c) RECOMMENDATION: Use of the developer box has greatly increased
the quality of the Brunning prints. Now prints larger than the standard
size can be run. This has proved very helpful with ORCS drawings, and
other drawings that are larger than the military standard.

1. Planning. None

2. Intelligence. None

3. Logistics.

(21) Major End Items

(a) OBSERVATION: During this reporting period several major end
items were drawn from the stockpile of critical components.

Examples are as follows:

(1) Major Items: Crane - new 1, crawler mounted 40 ton P&H (Harris-L-
model 500), 50 ton crawler mounted 30 ton front.

(2) Major Items: Tractor of Army Cat D-8, Components lacking: Black
oil pump, etc.

(3) Major Items: Tractor of Army Cat D-8, blade components are missing.

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26

24

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31 July 1968

SUBJECT: Operational Report of the 86th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (SPOR-65 (R1))


(b) EVALUATION: Major items received without components cannot be effectively utilized, if at all. The item mentioned in (e)(1)(a) above cannot be requisitioned as a major end item less components or as a major end item with components.

(c) RECOMMENDATION: Federal Stock Numbers should be closely screened to insure that the stock number used includes components and not just the major end item.

f. Organization None

g. Other None

1 Incl
as


DONALD A. WISDOM
LTC, CE
Commanding

21

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LGA-3 (31 July 1968) 1st Ind

126 D1-200/2003

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, RCS (CSFOR-65) (R1)

DA, Headquarters, 35th Engineer Group (Const), APO 96233, 23 August 1968

TO: Commanding General, 18th Engineer Brigade, ATTN: AVBC-C, APO 96377

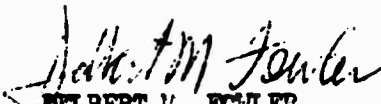
1. I have reviewed the Operational Report of the 864th Engineer Battalion (Construction) for the period ending 31 July 1968 and consider it an accurate account of the Battalion's activities.

2. Concur with the comments and recommendations of the Battalion Commander with the following exception and additional comments:

a. Reference Section 2, paragraph 2a(3). Nonconcur. The permanent authorization of personnel whose mission is to provide security could not be effectively utilized over a long period of time. Rather, it is recommended that engineer construction units operating in unsecured areas be augmented with security elements provided by the tactical unit responsible for the area of operation to supplement normal job site security.

b. Reference Section 2, paragraph 2b(13). The 864th Engineer Battalion will be advised to submit an Equipment Improvement Recommendation if continued testing of the universal joint type of tongue shows an advantage over the present rigid tongue.

c. Reference Section 2, paragraph 2b(19). In the design of sophisticated structures such as those required to accommodate communications facilities, the designing agency should, insofar as possible, specify materials listed in the Army LST. Essential materials which are not in the depots must be placed on order as soon as the project is approved for construction.


DELBERT M. FOSTER
Colonel, CE
Commanding

AVHGC-0 (31 Jul 68) 2nd Ind

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for the Period Ending 31 July 1968, RCS CSFOR - 65 (R1)

DA, Headquarters, 18th Engineer Brigade, APO 96377

TO: Commanding General, U.S. Army Vietnam, ATTN: AVHGC-DST, APO 96375

1. This headquarters has reviewed the Operational Report - Lessons Learned for the 864th Engineer Battalion (Construction) as indorsed by the 35th Engineer Group (Construction). The report is considered to be an excellent account of the battalion's activities for the reporting period.

2. This headquarters concurs with the observation and recommendations of the battalion and Group Commanders with the following comments added:

a. Reference: Section 2, paragraph b (1). Concur with evaluation. This headquarters recommends using an extreme fiber stress of 1400-1500 psi for Douglas Fir in design problems.

b. Reference: Section 2, paragraph b (10). Problems in obtaining parts for complex communication facilities have been caused by failure to identify parts and components. Civilian assistance is available and is being used by some units at the present time to identify parts names which have been misplaced in depots and storage yards.

Douglas K. Blue
DOUGLAS K. BLUE
Colonel, CE
Acting Commander

33

AVHCC-DST (31 Jul 68, 3d Ind MAJ Klingman/hga/LBN 4433
SUBJECT: Operational Report of the 864th Engineer Battalion (Construction)
for Period Ending 31 July 1968, MCS (SFOH-65 (R1)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96375 8 OCT 1968

TO: Commander in Chief, United States Army, Pacific, ATTN: CPOP-DT,
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 July 1968 from Headquarters, 864th Engineer Battalion (Construction).

2. Comments follow:

a. Reference item concerning use of nonstandard military equipment, page 21, paragraph 2b(5): Nonconcur. Nonstandard military equipment acquired from a contractor is often in excess to the contractor's requirements and in a used condition. Repair parts and technical manuals are not always maintained by the contractor. This excess equipment is given to a unit upon request and every effort is made by the contractor to provide repair parts and manuals under the "Piggy Back" program.

b. Reference item concerning Traction 290M, paragraph 2b(14): Nonconcur. The 290M tractor has a fluid power train, thus a modification to create a front and/or rear wheel drive would require a major modification.

FOR THE COMMANDER:

A.R. Guenther

A.R. GUENTHER
CPI AGC
ASST. ADJUTANT GENERAL

Cy furn:
HQ 13th Engr Bde
HQ 864th Engr Bn

GPOP-DT (31 Jul 68) 4th Ind

SUBJECT: Operational Report of HQ, 864th Engr Bn (Const) for Period
Ending 31 July 1968, RCS CSFOR-65 (R1)

34

HQ, US Army, Pacific, APO San Francisco 96558 26 OCT 1968

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters has evaluated subject report and forwarding indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:

C. L. Shortt

C. L. SHORTT
CPT, AGC
Asst AG

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35

ORGANIC UNITS

Headquarters and Headquarters Company, 864th Engr Bn (Const)

Company A, 864th Engr Bn (Const)

Company B, 864th Engr Bn (Const)

Company C, 864th Engr Bn (Const)

Company D, 864th Engr Bn (Const)

ATTACHED UNITS

569th Engineer Company (TOPO)(CORPS), Administrative Control

23rd Engineer Detachment (Well Drilling), Administrative and Operational Control

40th Engineer Detachment (Well Drilling), Administrative and Operational Control

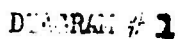
588th Engineer Detachment (Well Drilling), Administrative and Operational Control

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32

54



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ABSTRACT

The following items are recommended for inclusion in the Lessons Learned Index:

ITEM 1

* SUBJECT TITLE _____
** FOR OT RD # _____
***PAGE # _____

ITEM 2

SUBJECT TITLE _____
FOR OT RD # _____
PAGE # _____

ITEM 3

SUBJECT TITLE _____
FOR OT RD # _____
PAGE # _____

ITEM 4

SUBJECT TITLE _____
FOR OT RD # _____
PAGE # _____

ITEM 5

SUBJECT TITLE _____
FOR OT RD # _____
PAGE # _____

* Subject Title: A short (one sentence or phrase) description of the item of interest.

** FOR OT RD # : Appears in the Reply Reference line of the Letter of Transmittal. This number must be accurately stated.

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